

SUPPORT FOR THE AMENDMENT

This Amendment amends the specification; amends Claims 5 and 7-9; and adds new Claims 11-26. Support for the amendments is found in the specification and claims as originally filed. In particular, support for the amendment to the specification is found in the original specification at [0005]. Support for Claims 5 and 7-9 is found in the specification at least at [0005]. Support for new Claims 11-14 is found in the specification at least at page 5, Table 1, No. 16. Support for new Claims 15-18 is found in the specification at least at page 5, Table 1, Nos. 5, 8 and 16. Support for new Claims 19-22 is found in Claims 5 and 7-9 and in the specification at least at page 5, Table 1, Nos. 5 and 8. Support for new Claims 23-26 is found in Claims 5 and 7-9 and in the specification at least at page 5, Table 1, Nos. 1-4 and 6. No new matter would be introduced by entry of these amendments.

Upon entry of these amendments, Claims 5, 7-9 and 11-26 will be pending in this application. Claims 5, 7, 8 and 9 are independent.

REQUEST FOR RECONSIDERATION

Applicants respectfully request entry of the foregoing and reexamination and reconsideration of the application, as amended, in light of the remarks that follow.

The present invention provides an aluminum alloy for casting members for which high rigidity and a low linear thermal expansion coefficient are required, such as ladder frames and cases for automobiles. The alloy exhibits a high Young's modulus of 90 GPa or more and a low linear thermal expansion coefficient of $18 \times 10^{-6}/^{\circ}\text{C}$ or less. Specification at [0001]; [0019].

Claims 5 and 7 are rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 4,919,736 ("Nishi"). Nishi discloses an aluminum alloy, containing 0.5 wt% or less Ni, for abrasion resistant die castings. Nishi at abstract. Nishi fails to suggest the limitation of new Claims 15-22 that "the amount of nickel is 1-6% by mass" or the limitation of new Claims 23-26 that "the amount of nickel is 3-6% by mass".

Claims 5 and 7-9 are rejected under 35 U.S.C. § 103(a) over JP 2000-204428A ("Horikawa"). Horikawa discloses an Al alloy die cast piston that excels in fatigue strength at high temperature and antiwear quality. Horikawa at English-language abstract. Horikawa discloses that the Al alloy piston contains 0.2 to 1.0% Mn. Horikawa at English-language abstract. Horikawa discloses that the Al alloy piston contains 0.5-2.0 wt.% Mg to raise mechanical strength. English-language machine translation of Horikawa at [0010].

However, Horikawa fails to suggest the "consisting of" limitation of independent Claims 5 and 7-9, which excludes the "0.5-2.0 wt.% Mg" required by Horikawa.

The mechanical strength (e.g., ultimate tensile stress) achieved by Horikawa through the addition of 0.5-2.0 wt.% Mg is a different characteristic than the high rigidity (Young's modulus (=stress/strain) of 90 GPa or more) that is achieved by the present invention by excluding Mg.

Horikawa fails to suggest that the limitation of independent Claims 5 and 7-9 of "a Young's modulus of 90 GPa or more" can be achieved by excluding Mg in accordance with the "consisting of" limitation of independent Claims 5 and 7-9.

Furthermore, Horikawa discloses that "0.5-2.0 wt.% Mg" is an essential component of Horikawa's Al alloy. Horikawa at English-language abstract; English-language machine translation of Horikawa at [0010]. Thus, Horikawa teaches away from less than 0.5 wt% Mg. There is no suggestion or motivation to exclude Mg from Horikawa's Al alloy.

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. MPEP 2143.01.V.

Thus, Horikawa fails to suggest the "consisting of" limitation of independent Claims 5, 7, 8 and 9, which excludes the "0.5-2.0wt% Mg" required by Horikawa. Therefore, the rejection over Horikawa should be withdrawn.

Any *prima facie* case of obviousness based on Nishi or Horikawa is rebutted by the significant improvement in both rigidity (Young's modulus of 90 GPa or more) and linear thermal expansion coefficient ($18 \times 10^{-6}/^{\circ}\text{C}$ or less) that is achieved by the aluminum alloy of the present invention over the ranges of independent Claims 5, 7, 8 and 9 of "1-3% by mass of manganese" and "0.5-6% by mass of nickel", where "consisting of" excludes Mg. This is demonstrated in the attached Declaration Under 37 CFR 1.132.

The Declaration Under 37 CFR 1.132 at Table 2 shows that both high rigidity (Young's modulus of 90 GPa or more) and low linear thermal expansion coefficient ($18 \times 10^{-6}/^{\circ}\text{C}$ or less) is achieved only when the aluminum alloy contains the ranges of independent Claims 5, 7, 8 and 9 of "1-3% by mass of manganese" and "0.5-6% by mass of nickel", where "consisting of" excludes Mg. In contrast, when Ni is 0, 0.3 or 0.4 mass%, Young's Modulus is Poor (Table 2 at Nishi 1-3). When Mg is 0.3-1.5 mass%, coefficient of linear thermal expansion is Poor (Table 2 at Horikawa 1-5 and Comparative 1). When Mg is 0 mass%, but Mn is 0.2 or 0.8 mass%, coefficient of linear thermal expansion is Poor (Table 2 at Comparative 2-3).

The cited prior art fails to suggest the improved combination of high rigidity (Young's modulus of 90 GPa or more) and low linear thermal expansion coefficient ($18 \times 10^{-6}/^{\circ}\text{C}$ or less) that is achieved in accordance with the present invention over the ranges of independent

Claims 5, 7, 8 and 9 of "1-3% by mass of manganese" and "0.5-6% by mass of nickel", where "consisting of" excludes Mg.

Thus, any *prima facie* case of obviousness based on the cited prior art is rebutted. Therefore, the rejections under 35 U.S.C. § 103(a) should be withdrawn.

The Amendment filed 16 December 2008, is objected to. To obviate the objection the specification at [0005] is amended to recite "0.3-3% by mass of manganese".

Claims 5 and 7-9 are rejected under 35 U.S.C. § 112, first paragraph. To obviate the rejection, Claims 5 and 7-9 are amended to recite "1-3% by mass of manganese".

Applicants respectfully request that the Examiner acknowledge receipt of a certified copy of the priority document by initialing the appropriate boxes under section 12 on a Form PTOL-326.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance. Applicants respectfully request favorable consideration and prompt allowance of the application.

Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon



Corwin P. Umbach, Ph.D.
Registration No. 40,211

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413-2220
(OSMMN 06/04)

Attached: Declaration Under 37 CFR 1.132